

What Is Claimed Is:

1. An optical gas sensor for determining a gas in a gas mixture, comprising:  
a radiation source for emitting a radiation;  
a substrate; and  
a sensitive layer positioned on the substrate, wherein:  
the sensitive layer is porous, and  
the sensitive layer contains particles that are optically transparent to the radiation emitted from the radiation source and that lengthen an optical path of the radiation.
2. The optical gas sensor according to claim 1, wherein:  
the optical gas sensor is for determining a gas component of air.
3. The optical gas sensor according to claim 1, wherein:  
the particles include one of a glass, a quartz, and a PMMA.
4. The optical gas sensor according to claim 1, wherein:  
each of the particles has a diameter of 3 to 20  $\mu\text{m}$ .
5. The optical gas sensor according to claim 1, wherein:  
the particles are hollow.
6. The optical gas sensor according to claim 1, wherein:  
each of the particles is at least partially coated on a surface thereof with a material that is sensitive to the gas.
7. The optical gas sensor according to claim 6, wherein:  
the material that is sensitive to the gas includes tetraoctylammonium hydroxide.
8. The optical gas sensor according to claim 6,  
the material that is sensitive to the gas includes polydimethylsiloxane.

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9. The optical gas sensor according to claim 6,  
the material that is sensitive to the gas is free of a plasticizer.
  10. The optical gas sensor according to claim 6, wherein:  
the sensitive layer includes gaps between the particles, and  
the sensitive layer includes up to 25 volume% of the material that is sensitive  
to the gas.
  11. The optical gas sensor according to claim 1, wherein:  
the sensitive layer has a layer thickness of 20 to 100  $\mu\text{m}$ .
  12. The optical gas sensor according to claim 1, wherein:  
the substrate includes a detector.
  13. A method of using a sensor including a radiation source for emitting a radiation,  
a substrate, and a sensitive layer positioned on the substrate, the sensitive layer being porous,  
the sensitive layer containing particles that are optically transparent to the radiation emitted  
from the radiation source and that lengthen an optical path of the radiation, the method  
comprising the step of:  
determining a presence of at least one of  $\text{CO}_2$ ,  $\text{NO}_x$ ,  $\text{SO}_2$ ,  $\text{SO}_3$ ,  $\text{NH}_3$ ,  $\text{CO}$ ,  $\text{HCN}$ , and a  
halogen hydrogen compound.